

Remarks

Applicants respectfully request reconsideration of the above application in view of the present amendment and the following remarks. New claims 23-42 are pending in this application. Claims 1-22 are being canceled herein without prejudice to clarify the claimed invention and to place the claims in better condition for allowance. No new matter has been introduced by virtue of the present amendments.

The claimed invention

One aspect of the present invention is a computer-implemented method for estimating market value of a used vehicle. Page 5, Lines 5-6. The Applicants' unique method for estimation accounts for vehicle variations at the VIN level using a local search mechanism, such as the nearest neighbor approach. Page 5, Lines 10-14. The nearest neighbor, computer-implemented method can be combined with global estimation using regression or neural networks in certain circumstances to provide accurate estimations of a used vehicle's market value.

Claim 23 recites a computer-implemented method for estimating market value of a used vehicle. The method is comprised of receiving data from a historical database consisting of a number K of used vehicle nearest neighbor records, at least one target used vehicle record, at least one constraint for determining a neighborhood relationship between a pair of used vehicles, and a neighborhood distance function for determining a distance between a pair of used vehicles. Page 7, Lines 3-12. Each used vehicle nearest neighbor record is comprised of resale information and a plurality of used vehicle features. Page 7, Lines 14-22. The at least one target used vehicle record is comprised of a plurality of used vehicle features. Page 8, Lines 6-9. The method recited in claim 23 includes determining an estimated value for the at least one target used vehicle based on the data from the historical database, the at least one target used vehicle record, the at least one constraint, and the neighborhood distance function. Page 11, Lines 8-27. The estimated value of the at least one target used vehicle is relied upon by individuals to at least price used vehicles for resale. Page 8, Lines 9-11.

Claims 24-32 depend on independent claim 23. Claim 24 further recites that the determining step can include the use of global estimation using computer-implemented neural networks. Page 5, Lines 9-13. According to claim 25, the determining step includes the use of global estimation using computer-implemented linear regression. Page 5, Lines 9-13. Claim 26 further defines determining step B) of claim 23 by determining a weighted estimated value for each used vehicle nearest neighbor based on the data from the historical database, the at least one target used vehicle record, the at least one constraint, and the neighborhood distance function and determining an estimated value for the at least one used vehicle based on the weighted estimated values for the number K of used vehicle nearest neighbors. Page 10, Lines 23-33, and Page 11, Lines 1-7. Claim 27 recites that the resale information includes at least one item selected from the group consisting of resale date, region, mileage, condition, resale channel, and resale price. Page 7, Lines 19-22. Claim 28 recites that the plurality of vehicle features for the nearest neighbor record and target used vehicle record individually include at least two items selected from the group consisting of vehicle type, model, series, trim level, engine type, transmission type, moon roof-equipped, leather interior, interior color, and exterior color. Page 7, Lines 23-33, and Page 8, Lines 1-9. Claim 30 recites that the at least one constraint includes a constraint selected from the group consisting of the pair of vehicles are of the same model, the pair of vehicles are of the same series, the pair of vehicles have the same model year, the pair of vehicles are the same vehicle series, difference in mileage between the pair of vehicles is less than about 3,000 miles. Page 5, Lines 29-31, and Page 6, Lines 1-2. Claims 31 and 32 recite that the at least one used vehicle record can further comprise planned resale information that can include intended resale date, region, and resale channel. Page 8, Lines 9-11.

Claim 33 recites an alternative computer-implemented method for estimating market value of a used vehicle in accordance with the Applicants' invention. The claimed method includes receiving data which includes data from a historical database (V_1) comprised of a number N of used vehicle records (v^1), a data set (V_2) comprised of at least one target used vehicle record (v^2), and at least one constraint (Const) for determining a neighborhood relationship between a pair of used vehicles, a neighborhood distance function (F_d) for determining a distance between a pair of used vehicles, a nearest neighbor value (K), and a

previous estimation error value ($Error_p$). Page 6, Lines 31-32, Page 7, Lines 1-11, and FIG. 1. A used vehicle market value $Error_K$ is determined based on V_1 , Const, F_d , and K . Page 10, Lines 5-15 and FIG. 3. If $Error_K$ is less than $Error_p$, then an estimated value for each target used car is determined, K is set to $K+1$ and $Error_p$ is set to $Error_K$ and then the method is iterated by looping back to step B) to minimize $Error_K$. Page 9, Lines 11-25, and Page 10, Lines 1-4. This process of error reduction provides extremely accurate used vehicle market values. Dependent claims 34-42 further define the computer-implemented method recited in claim 33.

Rejection of Claims 1-22 under 35 U.S.C. § 101
As Being Drawn to Non-statutory Subject Matter

Claims 1-22 are rejected under 35 U.S.C. § 101 as being drawn to non-statutory subject matter. According to the Examiner, these claims are inoperative and, therefore, lack utility. The Examiner urges that the claims as written are merely for a thought process and as such are not patentable.

The Applicants have cancelled claims 1-22 and added new claims 23-42 to clarify the claimed invention. Claims 23-42 satisfy the statutory subject matter requirement of 35 U.S.C. § 101.

35 U.S.C. § 101 defines subject matter as “any new and useful process, machine, manufacturer, or composition of matter, or any new and useful improvement thereof.” The Supreme Court acknowledges that Congress, through legislation history, intended statutory subject matter to “include anything under the sun that is made by man.” *Diamond v. Chakrabarty*, 206 USPQ 193, 197 (S.Ct. 1980). According to the CAFC, a claimed invention on the whole must accomplish a practical application, that is, it must produce a useful, concrete and tangible result to satisfy the statutory subject matter requirement. *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 47 USPQ2d 1596, 1601-02 (Fed. Cir. 1998). A complete disclosure should contain some indication of the

practical application of the claimed invention, that is, why the Applicants believe the claimed invention is useful. M.P.E.P. § 2106 (II.)(A.)

The CAFC has illuminated examples of claims that meet the statutory subject matter requirement.

In *State Street Bank*, the CAFC held that a physical apparatus, *i.e.*, computer program, that transforms data of discrete dollar amounts into a final share price through a series of mathematical calculations constitutes a practical application since it produces a useful, concrete, and tangible result of the final share price which is the basis for investors and brokers making investment decisions. *State Street Bank*, 47 USPQ2d at 1602.

In *AT&T Corp. v. Excel Communications*, 50 USPQ2d 1447, 1452 (Fed. Cir. 1999), the CAFC held that patent claims directed at a method for transforming data, *i.e.*, a standard exchange message, into another form of data, *i.e.*, an exchange message including a primary interexchange carrier indicator, through Boolean algebra constituted patentable subject matter under 35 U.S.C. § 101. In his opinion, Judge Plager stated that the presence of transformed data could be indicia of statutory subject matter, if the data had a specific meaning that gave a useful, concrete, and tangible result:

The finding [in *Arrhythmia*] that the claimed process “transform data from one ‘form’ to another” simply confirmed that *Arrhythmia*’s method claims satisfied § 101 because the mathematical algorithm included within the process was applied to produce a number which had specific meaning - a useful, concrete, tangible result - not a mathematical abstraction.

AT&T Corp. v. Excel Communications, 172 F.3d at 1959.

The claimed invention recites a computer-implemented method that provides a useful application with a useful, concrete, and tangible result and goes beyond reciting a thought process or mathematical abstraction. Claim 23 recites receiving data from a historical database that is transformed into a used vehicle’s market value. By definition, a historical

database is a physical element, and not an abstraction. One well-known dictionary defines database as “a usually large collection of data organized especially for rapid search or retrieval (as by a computer).” MERRIAM WEBSTER DICTIONARY (visited December 9, 2002) <<http://www.m-w.com/>>.¹ A database can be “a collection of data files . . . stored in a computer system so that they are readily available.” MODERN DICTIONARY OF ELECTRONICS 173 (7th ed. 1999). A database has also been defined as “a file composed of records, each containing fields together with a set of operations for searching, sorting, recombining, and other functions.” MICROSOFT COMPUTER DICTIONARY 141 (5th ed. 2002). The data from the historical database is transformed into another value, *i.e.*, the estimated market value of a used vehicle. This value is relied upon by individuals to price used vehicles for resale. Additionally, dependent claims 24 and 41 recite that the determining step includes the use of global estimation using neural networks. A neural network is “a set of linked microprocessors that can form associations and learn like neurons in a human brain.” MODERN DICTIONARY OF ELECTRONICS 502 (7th ed. 1999). The Applicants’ invention as recited in claims 24 and 41 recites a computer that is programmed to use neural networks to transform data from a historical database comprised of used vehicle nearest neighbor records into an estimated market value for a used vehicle, which is used to price used vehicles for resale. Similarly, dependent claims 25 and 42 recite that the determining step includes the use of global estimation using linear regression. Typically, a computer is programmed with linear regression software, which in the claimed invention is used to transform data from a historical database into an estimated value for the target used vehicle.

In summary, the claimed invention as a whole accomplishes a practical application by producing a useful, concrete, and tangible result of estimating the market value of used vehicles based on data from a historical database. Additionally, the claimed invention utilizes computer-implemented global estimation techniques, for example, neural networks and linear regression, that physically transform data from a historical database into a used vehicle market value. For at least these reasons, the Applicants’ claims constitute statutory subject matter under § 101.

¹ The dictionary definitions cited herein have been copied and are included as attachments for the Examiner’s review.

Rejection Under 35 U.S.C. § 112, ¶ 2

It is unclear from the Examiner's Office Action as to which claims are rejected under 35 U.S.C. § 112, ¶ 2. Since the Applicants cannot identify which claims have been rejected, Applicants cannot respond to this rejection and respectfully request that a final rejection cannot be based on 35 U.S.C. § 112, ¶ 2. Additionally, Applicants believe that claims 23-42 are definite and satisfy the requirements of 35 U.S.C. § 112, ¶ 2.

**Rejection of Claims 1-22 under 35 U.S.C. § 103(a)
as Being Obvious in Light of NADA's Web Page**

Claims 1-22 have been rejected under 35 U.S.C. § 103(a) as being obvious in light of NADA's web page ("NADA") which discloses a method of determining a vehicle's price. According to the Examiner, NADA discloses a method for determining a vehicle's price which includes checking historical values for cars and using these values to generate values for autos. Although the Examiner does not provide evidence that error adjusting is necessarily present in the NADA method, the Examiner urges that error is inherent. The Examiner also states that NADA is regarded as one of the best sources for automobile prices because they have low error. According to the Examiner, NADA compares comparable vehicles for their prices and adjusts the prices for the estimation vehicle. The Examiner states that a price for average and prices for clean, rough, wholesale are listed. Therefore, the Examiner urges that the values are distance-weighted from the average price.

NADA's website does not teach, disclose, or suggest the invention as recited in claims 23-42. The historical database disclosed by NADA does not consist of a number K of used vehicle nearest neighbor records. NADA does not determine an estimated value for target used vehicles based on the data from the historical database consisting of a number K of used vehicle nearest neighbor records. These claimed features overcome the difficulties and shortcomings of NADA's method by using a local search mechanism. NADA uses a data set of comparable vehicles whereas the Applicants control the number of comparable vehicles, *i.e.*, nearest neighbors, that are used in the estimation process to provide the most accurate

estimation of market value. One feature of the Applicants' invention as recited in claims 23 and 33 is to select the best value for K such that the estimation error is minimized. NADA does not minimize estimation error based on selecting the best value for K, *i.e.*, the number of nearest neighbors, if it minimizes error at all. Similarly, the method recited in claim 33 describes the method for minimizing error by selecting the best value for K, the number of nearest neighbors, and using this number of nearest neighbors as the basis for determining a used vehicle's market value. For at least these reasons, the Applicants' claimed invention is patentable in light of NADA.

Furthermore, one of ordinary skill in the art would not be motivated to modify NADA to provide the Applicants' invention as recited in claims 23-42. As acknowledged by the Examiner, NADA computes an average price based on comparable vehicles which is adjusted based on vehicle condition, whereas the Applicants' claimed method determines a subset of comparable vehicles, referred to as nearest neighbors, which are used as the basis for distance weighting to obtain very accurate price estimates. Notably, NADA teaches away from the nearest neighbor concept by accounting for variations from average based solely on list prices for clean, rough, and wholesale vehicles. As acknowledged by the Examiner, NADA's method for determining vehicle prices provides one of the best sources for automobile prices, leaving one of ordinary skill in the art unmotivated to improve on NADA's estimation method. However, Applicants' claimed invention is an improvement over NADA by using the nearest neighbor concept in addition to distance weighting adjustments. For at least these reasons, Applicants contend that claims 23-42 are patentable in light of the teachings of NADA.

CONCLUSION

For the foregoing reasons, Applicants believe that the Office Action of October 3, 2002 has been fully responded to. Consequently, in view of the above amendments and remarks, Applicants respectfully submit that the application is in a condition for allowance, which allowance is respectfully submitted. The Examiner is highly encouraged to contact me to set up a telephonic interview if doing so will expedite successful prosecution of this application.

The Commissioner is hereby authorized to charge any fees associated with the filing of this paper to the deposit account of Ford Global Technologies, Inc., Account No. 06-1510.

Respectfully submitted,

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